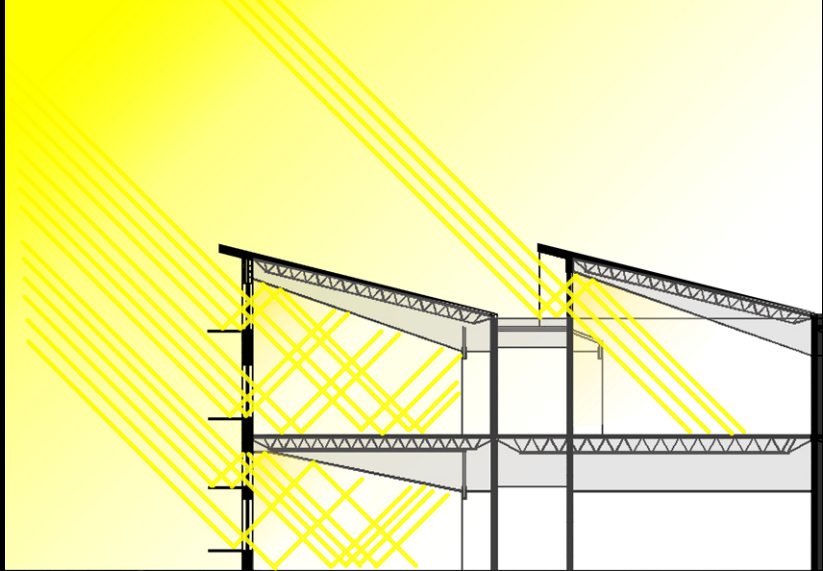


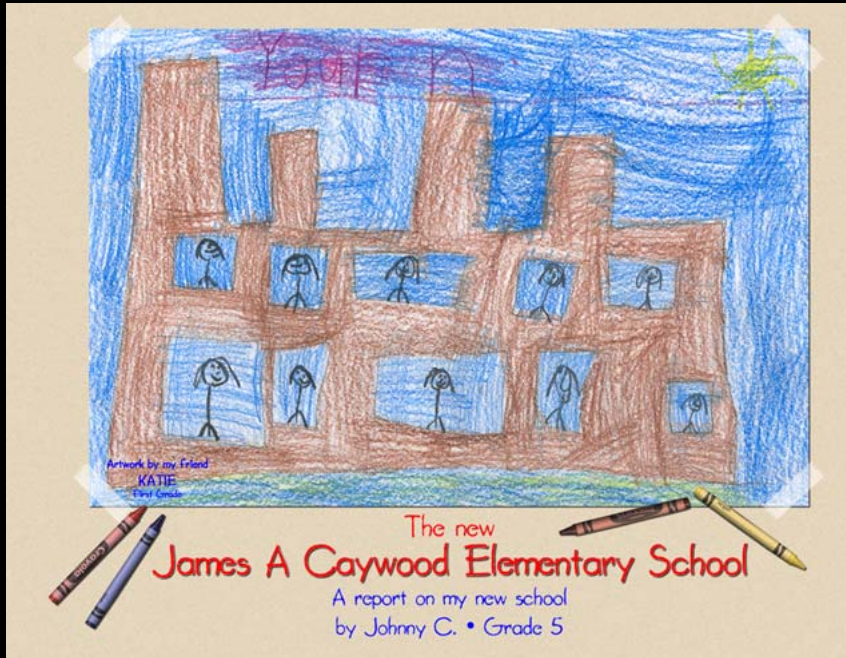
**Bringing the Benefits of
DAYLIGHTING INTO OUR SCHOOLS**



JAMES A.
CAYWOOD
ELEMENTARY

**KENTON
COUNTY
SCHOOL
DISTRICT**





THE COVER OF THE PUBLIC RELATIONS BROCHURE PRODUCED BY THE ARCHITECT FOR THE PARENTS OF THE SCHOOL DISTRICT PRESENTING THE NEW SCHOOL AND EXPLAINING THE HIGH PERFORMANCE FEATURES OF THE DESIGN.

- LOCATION EDGEWOOD, KENTUCKY
- GRADES K - 5th + PRESCHOOL
- CAPACITY 600 STUDENTS + 50 PRESCHOOL
- 4.5 ACRE SITE PURCHASED ADJACENT TO AN EXISTING MIDDLE SCHOOL FOR A TOTAL CAMPUS OF 22.1 ACRES
- BUILDING AREA 78,850 SQ. FT.
- AREA PER STUDENT 121 SQ.FT.
- COST PER SQ FT \$ 161.40
- CONSTRUCTION COST \$12,726,049.00
- TOTAL PROJECT COST \$15,401,193.00
- CONTRACT DATE AUGUST 2004
- COMPLETION DATE AUGUST 2005

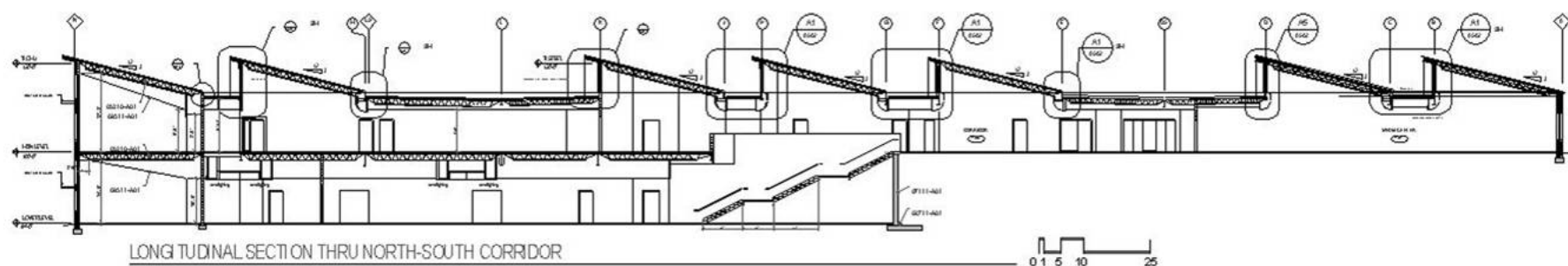
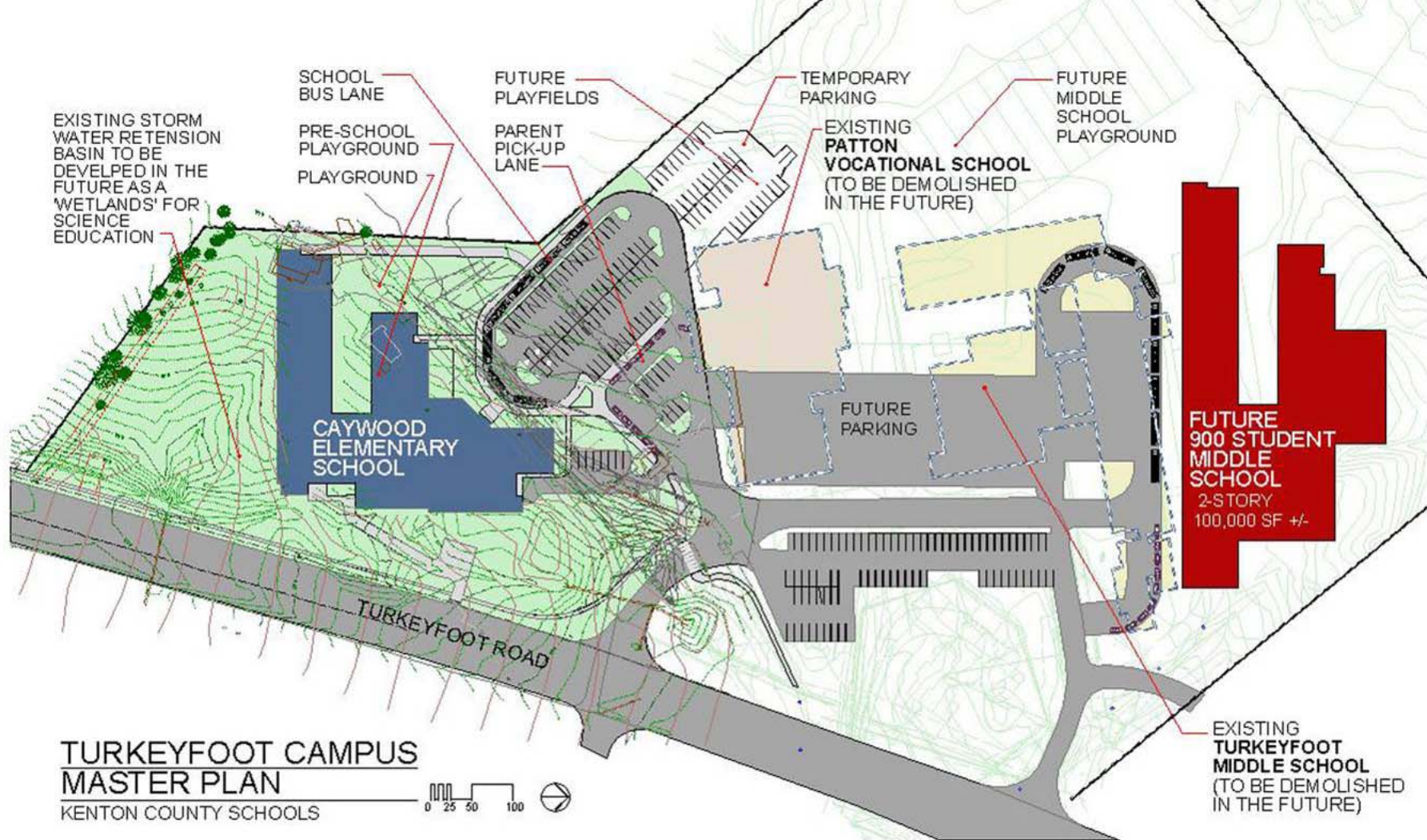




SITE CONSIDERATIONS

- MAXIMIZE SOUTH FACING EXPOSURES
- MINIMIZE EAST WEST FACING GLASS
- SEPARATE BUS LANES FROM PARENT LANES
- BALANCE CUT AND FILL
- ACCOMMODATE A 26' GRADE DROP ACROSS THE SITE





Geography

The new James A. Caywood Elementary School is located on Turkeyfoot Road right next to the James D. Patton Vocational School and Turkey Foot Middle School.



History



Very Nice! The next time you might want to try using a glue stick instead of scotch tape

This is my old school, James A. Caywood elementary school. It is located at 25 Summit Drive in Edgewood, KY. It was built in 1956. That was before I was born. My mom and dad said it was before they were born. That is very old!



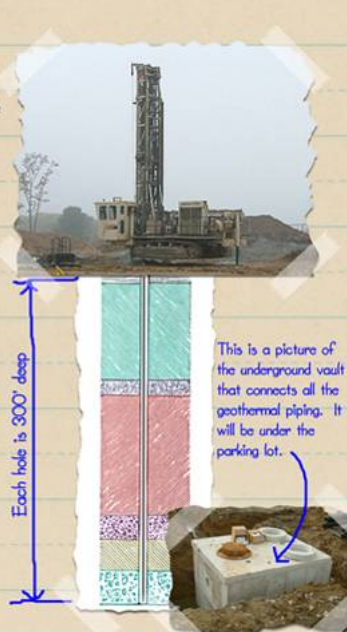
It was named after Mr. James A. Caywood. He was the superintendent of the Kenton County Schools and also the first principal of Dixie Heights High School. I can see the high school from my classroom window.

SEVERAL OF THE BROCHURE PAGES

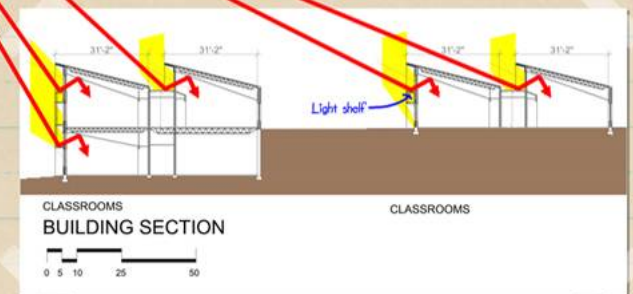
Science

My new school will be heated and cooled by a Geothermal Heating and Cooling System. 144 holes were drilled into the ground. They are about 300 feet deep. The holes have piping in them and they are all connected together and filled with antifreeze. In the winter the antifreeze is circulated through the piping in the earth and absorbs the stored heat from the ground and carries it indoors. Mechanical units in the building will compress the heat to a higher temperature and distribute it throughout the building. In the summer, the system reverses. Heat is pulled from the building, carried back into the cooler earth and deposited..

The system was designed by CMTA Engineering Consultants. They said it was three to four times more efficient than most other systems. The neat thing is that geothermal systems work with nature, not against it. The system does not burn any fossil fuel to generate heat. It simply transfers heat from the earth into the building. If a leak should ever happen in the underground piping, the antifreeze will not harm the environment.



The architect gave me this drawing that shows how the light shelf restricts the amount of sun light entering the lower windows of my classroom. The light shelf also bounces sun light up to the ceiling and back down to my desk. It's better for my eyes that way. I can't wait to see my new classroom.





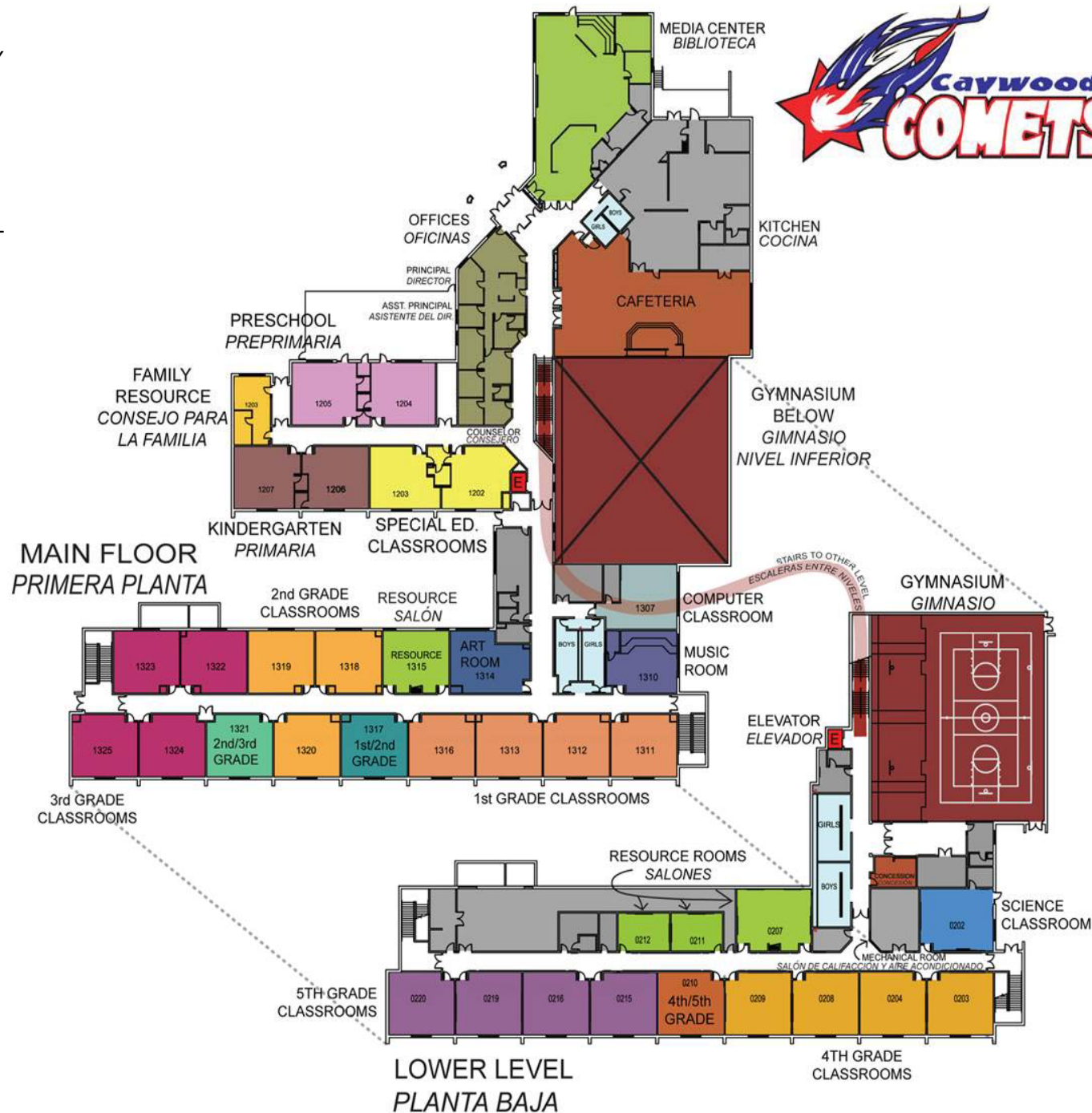
- COMMUNITY USE SPACES EASILY ACCESSED FROM THE ENTRANCE

- MINIMIZE THE DEPTH OF THE ROOMS TO MAXIMIZE THE DAYLIGHTING CONTRIBUTION

- ESTABLISH FLOOR GRADES THAT LEAST IMPACT SITE GRADING

- DAYLIGHTING STRATEGY THAT USES SOUTH FACING GLASS EXCLUSIVELY

- DESIGN A BUILDING SHELL THAT CAN IMPROVE ENERGY CONSUMPTION, REDUCE MAINTENANCE REQUIREMENTS, AND IMPROVE COMFORT



DAYLIGHTING PROVIDES A HIGHER RATIO OF LIGHT TO HEAT THAN ELECTRICAL SOURCES. MORE LIGHT LESS HEAT.

HEAT ENERGY

- MAXIMIZE WINTER HEAT GAIN AND BLOCK THE DIRECT SOLAR HEAT GAIN DURING THE SUMMER.

LIGHT ENERGY

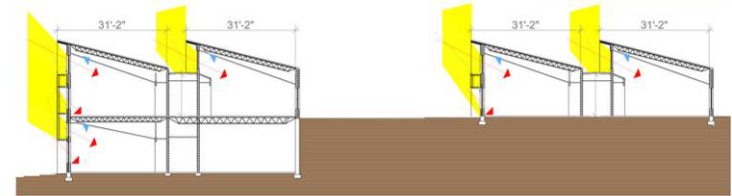
- USE CLEAR TRIPLE GLAZING ON SOUTH CLERESTORIES FOR MAXIMUM LIGHT TRANSMISSION.
- USE OF LIGHTSHELVES TO REFLECT SUNLIGHT TO THE CEILING TO DISTRIBUTE FARTHER INTO THE SPACE AND TO SHADE THE VIEW GLASS.
- USE OF HORIZONTAL BLINDS TO BAFFLE DIRECT SUNLIGHT AND ASSIST IN REFLECTING THE SUNLIGHT (BLADES ARE TURNED UPSIDE-DOWN).
- USE OF VERY LIGHT-COLORED PAINT INSIDE THE DAYLIGHT COLLECTOR SPACES.

EDUCATIONAL PROGRAM FEATURES

- The educational program is intended to use the building as a teaching tool to engage the students in science and our environment.
- Daylighting is used not only to impact the energy usage of the school, but even more importantly to enhance the learning environment. Independent studies have shown that students perform better in day lit classrooms, significantly raising their test scores and reducing absenteeism.

DAYLIGHTING

A REVOLUTIONARY, MORE EFFICIENT WAY TO LIGHT OUR SCHOOLS



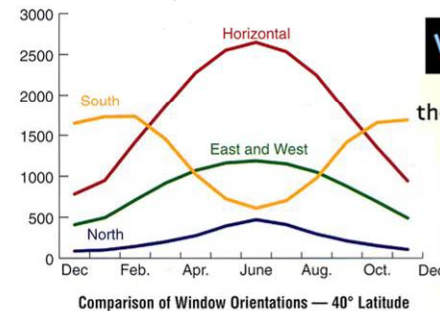
CLASSROOMS
BUILDING SECTION



CLASSROOMS

HOW IT WORKS

The light shelf restricts the amount of sun light entering the lower windows of the classrooms. It also reflects light up to the ceiling and back down onto desks, reducing glare and maximizing the amount of natural light in the room.

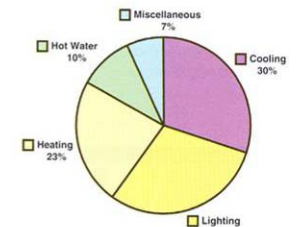


WHY IT'S BETTER

By strategically placing the majority of the windows on the south side of the school, Caywood receives the highest amount of solar radiation in the winter, when the sun is lower in the sky. In the summer, the windows are shaded by the overhangs, keeping the school cooler. The windows in the new school also have three panes and built in louvers to help minimize heat gain and glare in warmer months and heat loss in the colder months.

HOW IT SAVES

Surprising though it may seem, lighting in schools makes up about 30% of the energy used. Engaging natural light in such an effective way as DAYLIGHTING, could dramatically reduce the amount of money and energy expended by the school as a whole.



School Energy Use Distribution
In typical schools, energy is primarily used for cooling and lighting.

SOUTH ELEVATION



NORTH WEST ELEVATION



ENTRY CORRIDOR VIEWS



VIRTUAL CLASSROOM MODEL VIEW



TYPICAL CLASSROOM



TYPICAL CLASSROOM







CAFETERIA



NEW SCHOOL LOGO

OPEN CEILING AREA EXPOSING BUILDING SYSTEMS AND WINDOWS INTO THE MECHANICAL ROOM ADJACENT TO THE SCIENCE CLASSROOM TO FACILITATE USE OF THE BUILDING AS A SCIENCE TEACHING TOOL



RECESSED CEILING NIGHT SKY
WITH COMET AT GYMNASIUM
ENTRANCE





GYMNASIUM

STORY AREA

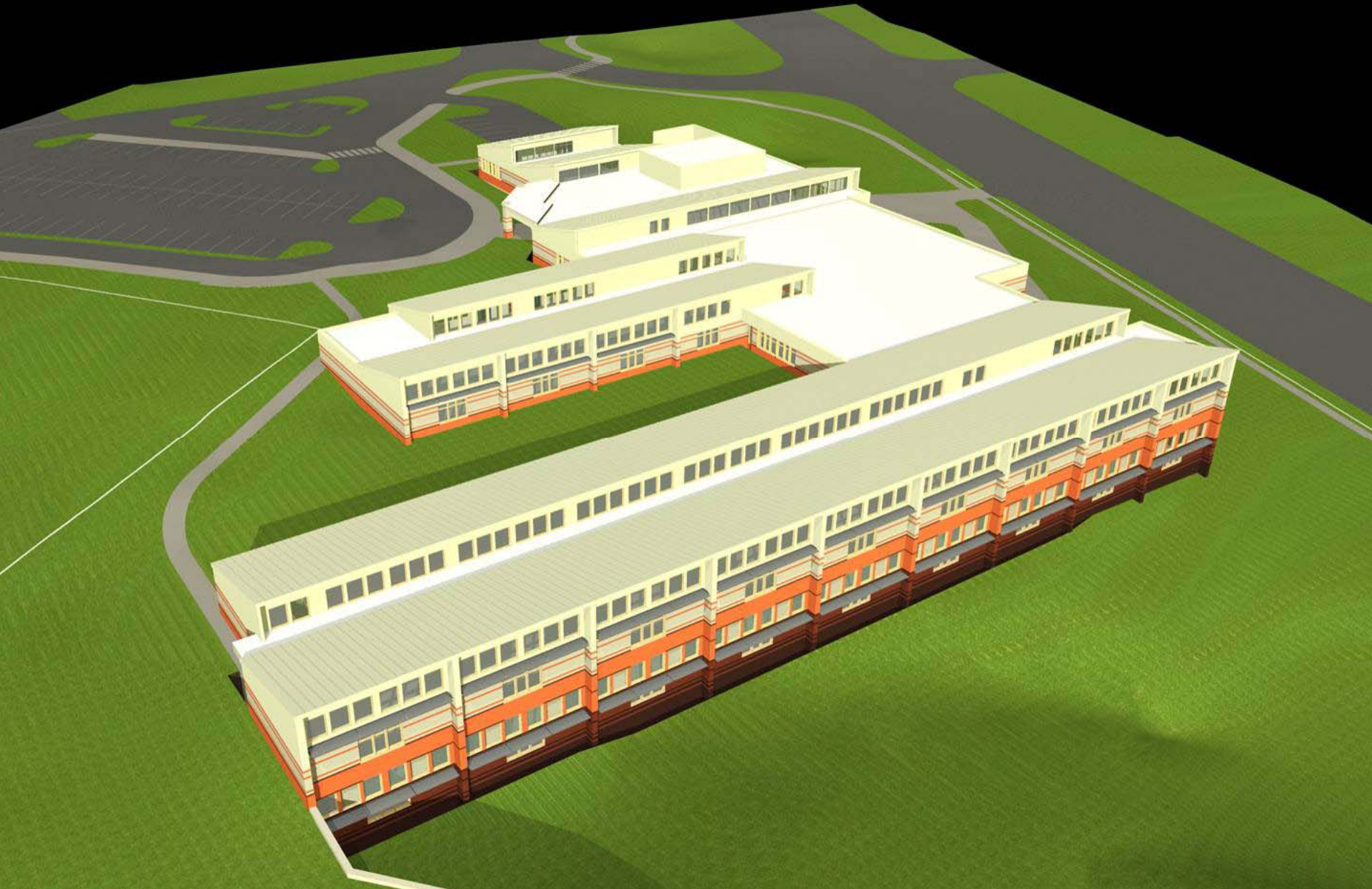


LIBRARIAN'S DESK



MEDIA CENTER

JAMES A. CAYWOOD ELEMENTARY SCHOOL



COST BENEFIT AND LIFE CYCLE ANALYSIS



- ELIMINATE STORM WATER COLLECTION AND DISTRIBUTION SYSTEM ESTIMATED TO COST \$170,000.00
- ELIMINATE SOLAR POWERED SITE LIGHTING ESTIMATED AT \$5,000.00 PER FIXTURE TOTAL COST OF \$30,000.00
- ELIMINATE DAYLIGHTING THE GYMNASIUM ESTIMATED TO COST AN ADDITIONAL \$150,000.00. CLERESTORY ALTERNATES FOR THE CAFETERIA AND MEDIA CENTER WERE ACCEPTED AT A COST OF \$200,000.00.
- STANDING SEAM METAL ROOF IN LIEU OF A SHINGLE ROOF ALTERNATE ACCEPTED AT A COST OF \$97,000.00.
- LINOLEUM FLOORING IN LIEU OF VCT ALTERNATE WAS ACCEPTED AT A COST OF \$105,000.00.
- PAINTED CMU IN LIEU OF GROUND FACE BLOCK IN ENTRY WOULD HAVE BEEN A DEDUCT OF \$15,000.00.

Thank yous

While writing my report I found out that it takes a lot of people to help get a new school built. These are pictures of just a few of the people who made the new James A. Caywood Elementary School possible. Many of them helped me with this report. Thank you to everyone!



Dr. Susan K. Cook
Superintendent



Mike Martin - Vice Pres. Carl Wicklund - President
Tamara Miano, Esq. Janice Hacker Karen Collins
2004-2005 Kenton County Board of Education Members



Tim Hanner
Deputy Superintendent



Rob Haney
Director of Support Operations
KCS Project Manager for the Caywood School



Robert Lape
Facilities Manager
KCS "Cheerleader" for Green Architecture



PIASKOWY
+ COOPER
PSC

ARCHITECTS
+ PLANNERS

